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STATE OF ALASKA

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ANNUAL REPORT OF PROGRESS, 1961-1962

FEDERAL AID IN FISH RESTORATION PROJECT F-5-R-3

SPORT FISH INVESTIGATIONS OF ALASKA

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## INTRODUCTION

This report of progress consists of the job completion reports from the State of Alaska Federal Aid in Fish Restoration Project F-5-R-3, "Sport Fish Investigations of Alaska."

The current project is composed of twenty separate studies and was designed to evaluate the various aspects of the State's recreational fishery resources. The information gathered will provide the necessary background data for better management practices and for the development of future studies. During the current segment, continued emphasis was placed on the overall inventory and cataloging of accessible waters, evaluation of catch data, and investigations on various species of fish.

As a result of several problems of immediate concern, several new studies were instigated during the report year. Data accumulated from these studies has helped solve some problems in projects already in progress.

The population of Alaska is increasing rapidly and this is being reflected in the ever increasing number of "No Trespassing" signs put up by individuals in the vicinity of population centers. Fortunately, much of Alaska's fishery waters are still in the public domain. The division's program of acquiring access to fishing waters continued at a much faster pace since being instigated in 1959. Emphasis is being placed on this job and the successful continuation of this activity will forstall many serious recreational use problems currently facing other states.

The enclosed progress reports are fragmentary in many respects and the interpretations contained therein are subject to re-evaluation as the work progresses.

JOB COMPLETION REPORT  
RESEARCH PROJECT SEGMENT

State: ALASKA

Project No: F-5-R-3

Name: Sport Fish Investigations  
of Alaska

Job No: 10-F

Title: Inventory and Cataloging  
of Sport Fish and Sport  
Fish Waters of the Cook  
Inlet Drainages

Title: Silver Salmon Egg Taking  
Investigations in Cook  
Inlet Drainage

Period Covered: July 26, 1961 to October 6, 1961

Abstract:

Fish Creek, outlet to Big Lake, Matanuska Valley, was investigated as a source of silver salmon eggs. A weir with an upstream trap was in operation from July 29 through September 11. Of 613 adult silver salmon trapped, 350 were held in live cages for ripening. Approximately 271,700 eggs were taken from 112 female silver salmon.

Recommendations:

Knik Arm silver salmon runs are intensively utilized by sport, commercial and subsistence fishermen. No further silver salmon egg takes are recommended in these drainages.

It is recommended that the August 1 salmon sport fishing opening be retained on Fish Creek.

Objectives:

To establish sources for procuring silver salmon eggs from upper Cook Inlet.

#### Techniques Used:

A weir of the deck and horse design was constructed at a point one-half mile above the terminus of Fish Creek. The weir functioned well and presented no particular problems in operation or maintenance. One inch square pickets placed one and one-half inches apart were used throughout. An opening of three inches was used for the trap entrance and worked well.

Four holding pens were constructed; two pens for ripe and green females and two pens for ripe and green males. Rough-sawn cottonwood and spruce lumber was trucked to the stream site where most of the weir was prefabricated on the stream bank prior to installation in the stream. Experience gained from the 1960 Cottonwood Creek weir was used in constructing holding pens that would allow water to well up through openings in the bottom. This technique moderated the rheotaxic stimulus and reduced "fighting" of the pickets by the salmon. Fish held approximately 60 days were in better condition than fish held a like period the previous year in Cottonwood Creek.

Malachite green treatments were given every day from July 29 to check eudemic fungus infections.

The spawning operation consisted of killing the females, severing the dorsal artery and allowing the fish to bleed completely on a bleeding rack. One male was used for every two females. The dry method of fertilization was used throughout the operation.

To complement the evaluation of the Fish Creek silver salmon run a creel census was taken on the one-half mile of stream below the weir.

Silver salmon were counted several days prior to the installation of the weir. No attempt to trap silvers was made at this time due to unmanageable numbers of adult red salmon in the stream.

Scale samples, lengths and weights were taken from female spawners for historical background information.

Findings:

Female fish were not sorted until September 18 when they were graded according to ripeness. The fish were graded seven times until completion of the spawning operation on October 6.

Statistics for the 1961 silver salmon egg take on Fish Creek are as follows:

Silver salmon count at weir site	796
Sport catch below weir	<u>202</u>
Total silver salmon run	998
Female holding mortality	108
Females spawned	112
Male holding mortality	54
Males spawned	<u>76</u>
Total weir mortality	350
Escapement above weir	234 (23%)

Serious mortalities occurred during the last three weeks of the spawning operation. All the female mortality occurred in unripe or green fish. Water temperatures fell to the mid-40's delaying ripening. Low temperatures extended the confinement period and increased mortality resulted.

Table 1 presents the daily weir counts of silver salmon, red salmon, and chum salmon. The last silver salmon observed entered the weir on September 11. Fish Creek drainage is primarily a red salmon producing area. No pink or king salmon were observed in 1961.

TABLE 1. FISH CREEK WEIR COUNTS - 1961

DATE	SILVERS		TOTAL SILVERS	REDS	CHUMS
	FEMALE	MALE			
July 29	4	4	8	700	-
30	-	2	2	411	-
31	21	5	26	932	1
Aug. 1	-	-	-	309	-
2	-	1	1	73	-
3	1	-	1	163	-
4	7	4	11	168	-
5	9	7	16	117	-
6	12	8	20	114	-
7	24	9	33	382	-
8	4	1	5	57	1
9	6	3	9	70	1
10	3	-	3	29	-
11	2	-	2	6	1
12	2	-	2	6	-
13	5	-	5	5	-
14	10	6	16	21	-
15	6	6	12	43	-
16	2	1	3	27	1
17	4	4	8	17	1
18	1	1	2	19	-
19	3	1	4	7	-
20	1	1	2	8	-
21	1	1	2	22	-
22	3	1	4	24	-
23	6	4	10	37	-
24	3	5	8	16	-
25	2	4	6	19	1
26	-	-	-	1	-
27	4	1	5	5	-
28	1	1	2	17	-
29	23	15	38	35	-
30	2	5	7	21	-
31	4	1	5	2	-

TABLE 1. (Continued) FISH CREEK WEIR COUNTS - 1961

DATE	SILVERS		TOTAL SILVERS	REDS	CHUMS
	FEMALE	MALE			
Sept. 1	11	10	21	10	-
2	13	17	30	27	-
3	1	3	4	5	-
4	2	1	3	2	-
5	2	2	4	-	-
6	2	1	3	7	-
7	46	129	175	24	-
8	7	12	19	16	-
9	-	1	1	7	-
10	13	38	51	33	-
11	13	13	26	6	-
TOTALS	284	329	613	4,020	7

Scale samples obtained from the female silvers were analyzed for age composition. All of the fish sampled were age four, with the exception of one fish which had three fresh water annuli and two salt water annuli.

Survival of the eggs and fry was poor. Twenty per cent of the eggs were lost soon after fertilization. Total mortalities reached 44%.

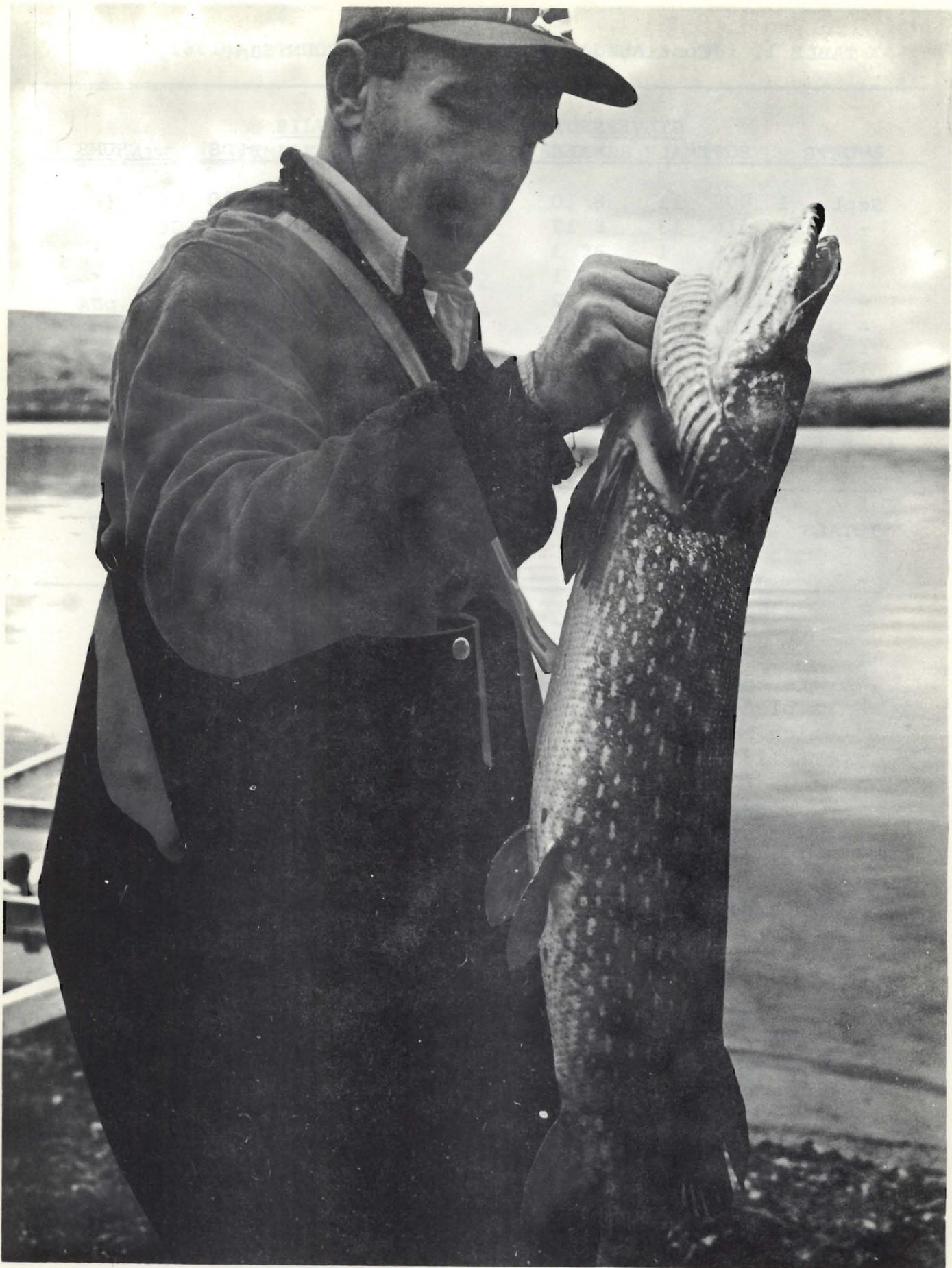
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Interior Alaska waters yield trophy size pike.